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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,747

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David A. Russo

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ARKEMA INC.

PATENT DEPARTMENT - 26TH FLOOR

2000 MARKET STREET

PHILADELPHIA, PA 19103-3222

EXAMINER

KATZ, VERA

ART UNIT

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1794

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,747	<b>Applicant(s)</b> RUSSO ET AL.	
	<b>Examiner</b> Vera Katz	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 12-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/21/06</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-11, drawn to a transparent conductive film and a coated substrate

Group II, claim(s) 12-18, drawn to a method of depositing metal oxide films.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Groups I-II each include the common technical features expressed in claims 1-6 and 12-16. However, these technical features do not constitute a special technical feature because they are not a contribution over the prior art. US Patent 6, 524,647, cited in the International Search Report dated May 15, 2005 discloses a niobium doped oxide applied to a glass substrate by CVD as set forth in claims 1-4 and 12-14; (abstract). Japanese Patent Publication JP-60184691 cited in the International Search Report dated May 15, 2005 discloses a mixture of rutile and tin oxide and a method of making an intermediate layer as set forth in claims 5-6 and 15; (abstract).

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The special technical feature of Group I invention presented in claim 10 is transparent conductive film claimed therein which is not present in Group II. The special technical feature of Group II invention is specific technical feature claimed in claim 18 is not present in Group I.

3. During a telephone conversation with Steven Boyd, r.n. 31,000 on 3/31/09 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Information Disclosure Statement***

5. The listing of references in the specification on p. 2, lines 19-20 is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

***Claim Objections***

6. Claims 5 is objected to because of the following informalities: Claim 5, line 1 recites "rutile metal oxide" and further lists a group of metals. However, rutile is one of the polymorphic forms related only to  $\text{TiO}_2$ .
7. Claim 7 line 2 recites " $\text{M}'\text{O}_2/\text{M}''\text{O}_2/\text{M}'''\text{O}_2$  wherein ...  $\text{M}'''$ ...etc". Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 4, 6, 9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 1-2 recites the limitation "the ionic size"; lines 2-3 recites "the size of the host ions". There is insufficient antecedent basis for these limitations in the claim.

Claim 4 and 9, line 1 recites "a coated substrate comprising a substrate". It is unclear if the first and the second substrate in the recitation above are the same or different. For compact prosecution this limitation will be examined as if they are the same.

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Claim 6 recites “other metal oxide capable of stabilizing the rutile  $\text{MO}_2$  film”. The other metal oxide was not found in the disclosure. It is unclear what the applicant meant.

Claim 11, line 4 recites the limitation “the glass”. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Varanasi (6524647, cited in IDS).

Varanasi teaches a niobium ( $\text{Nb}^{5+}$ ) -doped film of tin oxide with a chemical formula  $\text{Sn}^{4+}$  ( $0.70\text{\AA}$ )  $\text{O}_2$  which is a conductive film; [abstract, col. 2, line 49]. The film is used for clear glass applications and is considered to be a transparent film; [col. 2, line 62]. The ionic size of the  $\text{Nb}^{5+}$  ( $0.70\text{\AA}$ ) dopant approximates the size of the host ion  $\text{Sn}^{4+}$  ( $0.70\text{\AA}$ ) of the

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doped metal oxide and is within the range of the instant claim 2. Varanasi teaches that conductive film can directly coat the substrate; [col. 6, lines 52-53].

10. Claims 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Asano (4584084).

Considering claims 5 and 6, Asano teaches a conductive oxide film; [col. 8, line 38]. Asano does not specifically disclose a transparency of the film. However, the thickness of the intermediate layer should be on the micro level and the disclosed material of the layer is similar to that of the instant claim, therefore, the transparency of the layer should commensurate with the claim limitation.

Asano further teaches that the film of the intermediate layer is composed mainly of rutile type metal oxides  $MO_2$ , such as  $TiO_2$  or  $SnO_2$  or a mixture of both; [Col 8, line 40-44 and col. 6, line 2]. Each of  $TiO_2$  or  $SnO_2$  can be considered to be a layer within a film on the microscopic level. However, Asano further teaches that an electrode coating film may comprise  $RuO_2$ ; [col. 7, line 6]. Asano also discloses that there may be another layer formed by oxidizing the surface of the substrate and forming conductive titanium oxide; [col. 5, line 65]. It is considered that layers form a sandwich structure of  $TiO_2/TiO_2-SnO_2/RuO_2$  or  $TiO_2/SnO_2/RuO_2$  or  $TiO_2/TiO_2-SnO_2$ .

Considering claim 8, the reference teaches that the metal oxide may be a solid solution of oxides or nonstoichiometric oxides as in the instant claim. Also, if  $x=1$ , then the chemical formula is  $SnO_2$ ; and if  $x=0$  then the chemical formula is  $MO_2$ , that can be  $TiO_2$  or  $RuO_2$ .

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Considering claim 9, an electrode substrate can be directly coated with a transparent conductive intermediate film [col. 8, lines 18-19].

11. Claims 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Elkadi (20020196519). Elkadi teaches a soda-lime substrate glass with a deposited transparent conductive film comprising tungsten oxide or molybdenum oxide or a mixture of both; [0017]. This limitation is within the range of the instant claim 10 wherein  $x=0$ .

The reference further teaches an example wherein tungsten oxide is doped with lithium oxide, which is considered to be incorporation/implantation of Li; [0049]. The reference teaches that there is sodium diffusion from the soda-lime glass that can be reduced by applying additional coating; see claim 8. This teaching allows considering a diffusion of sodium from glass into the coating and incorporation of it into the tungsten oxide or molybdenum oxide. However, the recitation of "annealing/diffusion of Na, K, and Li from the glass" is a product by process limitation that does not limit the structure of the film.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, see attached form PTO-892.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vera Katz whose telephone number is (571)270-7082. The examiner can normally be reached on M - Th 8-5.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JENNIFER McNEIL can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vera Katz/  
Examiner, Art Unit 1794

/JENNIFER MCNEIL/  
Supervisory Patent Examiner, Art Unit 1794